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Assessment of the intensity of slope erosion using terrestrial laser scanning

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Abstract

© 2016,International Journal of Pharmacy and Technology. All rights reserved.Assesment of the intensity of soil erosion is a crucial challenge of modern geomorphology. Despite the fact that there are a number of methods of studying exogenous processes,such as assessment of intensity by rill wash,pins method,radioactive tracer method,the problem of quantitative assessment of erosion intensity in various sections of a temporary hydrographic net remains still unsettled. Terrestrial laser scanning (TLS) allows overcoming the difficulties associated with low productivity and accuracy of traditional methods. Operations on erosion intensity assessment were carried out on two key sites within the city of Kazan in 2013-2015,and on two sites in Vysokogorsky district of Kazan in 2015. The results of the measurements show the predominance of erosion (-37.69 m3/ha on the first and -86.53 m3/ha on the second key site) on the slope in Kazan and the predominance of accumulation (53.45 m3/ha on the first and 71.66 m3/ha on the second key area) in Vysokogorsky district of Kazan. The results obtained suggest the possibility of applying the TLS for a quantitative and qualitative assesment of the intensity of denudation,and determination of the process flow patterns. The method allows evaluating integrally the cumulative effect of the entire complex of exogenous processes,flowing on the slopes.

Keywords

Environmental impact assessment, Laser scanning, Soil erosion